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INFORMATION REPORT

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CENTRAL INTELLIGENCE AGENCY

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COUNTRY
Hungary

SUBJECT
Atomic Technical Research Center

DOE review completed.

DATE DISTRIBUTED
21 October 1957

NO. OF PAGES 3 | NO. OF ENCLS. 8

SUPPLEMENT TO REPORT #

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THIS IS UNEVALUATED INFORMATION

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This report is the result of a joint collection effort by [redacted] and CIA and is disseminated in accordance with the provisions of NSCID #7.

1. [redacted]

2. The Central Physics Research Institute of the Hungarian Academy of Science was organized in 1952. Construction was immediately begun at the site, which 25X1 is in a heavily wooded area. The northwest boundary fence borders on the camp occupied by the Hungarian Pioneer Boys, who are comparable to the Boy Scouts of America.

3. The Institute is guarded by a detachment of AVH. Visitors to the installation had to make arrangements, 24 hours in advance, through their sponsor to the AVH and the director. Two passes were required, one to enter the main gate and one to the individual buildings, which were always locked and guarded.

4. The main purpose of the Institute is research and development. Engineers and scientists are furnished the best available equipment for unlimited research in their speciality. The project is 50 percent complete and construction is continuing.

5. The four-story reactor building was completed early in 1956 and operation of the reactor is scheduled for the spring of 1958. Its prime functions will be research and the manufacture of isotopes for domestic use. The third and fourth floors are occupied by the Director and administrative personnel.

6. The basic reactor is a Soviet type, two thousand kw, water-cooled reactor, but the Hungarians are installing many innovations of their own to improve its operation. Stainless steel piping and shielding, manipulators, and fuel were furnished by the USSR. All other equipment was manufactured in Hungary.

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7. Uranium 235 enriched to 10 percent of the neutrons will be used as fuel. Eight boron-carbide rods will be used for rough regulation and one iron rod for fine control. All rods will be controlled electrically. Fine control down to one decimeter will be possible. For emergencies an electric magnet will guide the rods into a groove that connects with a pool of water beneath the reactor.

8. Pure distilled water is used in the primary circuit and ordinary water circulates in the secondary circuit. All the piping was electrically welded at the joints. The heater exchanger is cylindrical in shape and was made of stainless steel.

9. Temperature space-rating for the primary cooling circuit will be: incoming 34 degrees centigrade, exit at 36 degrees centigrade. This represents about one thousand cubic meters per hour with a full load on the reactor. The secondary cooling system enters the heat exchanger at 32 degrees centigrade and exits at 34 degrees centigrade representing approximately 300 cubic meters per hour. Pressures are electrically controlled.

10. a method of reducing storage space of radioactive liquid waste by removing the elements SR 89 (Strontium) and CE (Cerium) and disposing of the remaining elements with safety. A reduction of 300 cubic meters of waste to seven cubic meters was possible but the Hungarian government would not accept method.

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11. a technical book, "Fundamental Principles of Reactor Physics and Reactor Technics". It was published in 1956 and edited by Karoly Simonyi, one of Hungary's top experts in nuclear physics. The co-writers of related subjects were all employed by the Central Physics Research Institute.

12. The complete reactor program for Hungary can be found in one of a set of 12 volumes which were published by the United Nations shortly after the 1955 conference in Geneva, Switzerland, on the peaceful use of atomic energy.

13. The following men were leading members of the Institute:

a. Karoly Simonyi, Director;

b. Lenard Pal, head of Reactor Research;

c. Laszlo Bozoky, in charge of Physics Research;

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d. Peter Farago, exact position unknown.

Enclosure A - Sketch of Institute Layout. Classified - CONFIDENTIAL
Enclosure B - Sketch of Reactor and Auxiliary Buildings. Classified - CONFIDENTIAL

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Enclosure C - Sketch of Basement of the Reactor Building. Classified - CONFIDENTIAL
Enclosure D - Sketch of Main Building and Reactor Hall Floor Plan. Classified - CONFIDENTIAL
Enclosure E - Sketch of Second Floor of Main Building and Reactor Hall. Classified - CONFIDENTIAL
Enclosure F - Sketch of Cut Away View of Reactor. Classified - CONFIDENTIAL
Enclosure G - Sketch of Cut Away View of the Reactor Channel Arrangement. Classified CONFIDENTIAL
Enclosure H - Sketch of Underground Storage Tank for Liquid Radioactive Waste. Classified - CONFIDENTIAL

All the above mentioned Enclosures include a legend describing points shown on drawings.

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Alapjai" (Fundamental Principles of Reactor Physics and Reactor Technics):

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1 - Cut-away view of reactor
2 - Reactor channel arrangement
3 - Rod arrangement
4 - Title page
5 - Chart containing experimental data.

- end -

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ENCLOSURE A

[redacted] Sketch of Institute Layout and Legend

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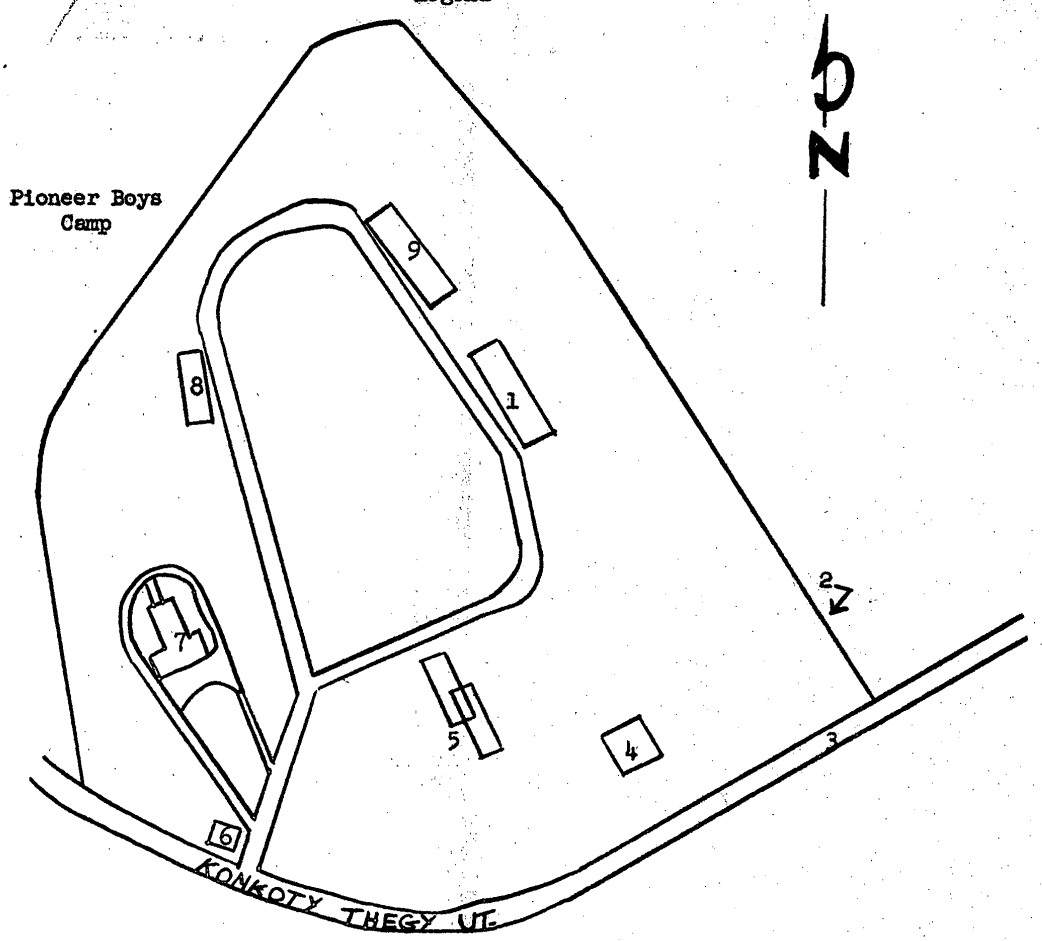

Pt 1 - Atomic Research building.

Pt 2 - Barb wire security fence two meters high encircling the installation.

Pt 3 - Brick wall, two meters high, along side of road.

Pt 4 - Main boiler house, providing heat for all the buildings.

Pts 5 and 9 - Research buildings. Unknown type of experiments were being conducted.

Pt 6 - AVH guard station and main entrance gate.

Pt 7 - Reactor and auxiliary buildings. Reactor building has a rough brick exterior, with steel support beams and cement flooring throughout.

Pt 8 - Cosmic ray research building.

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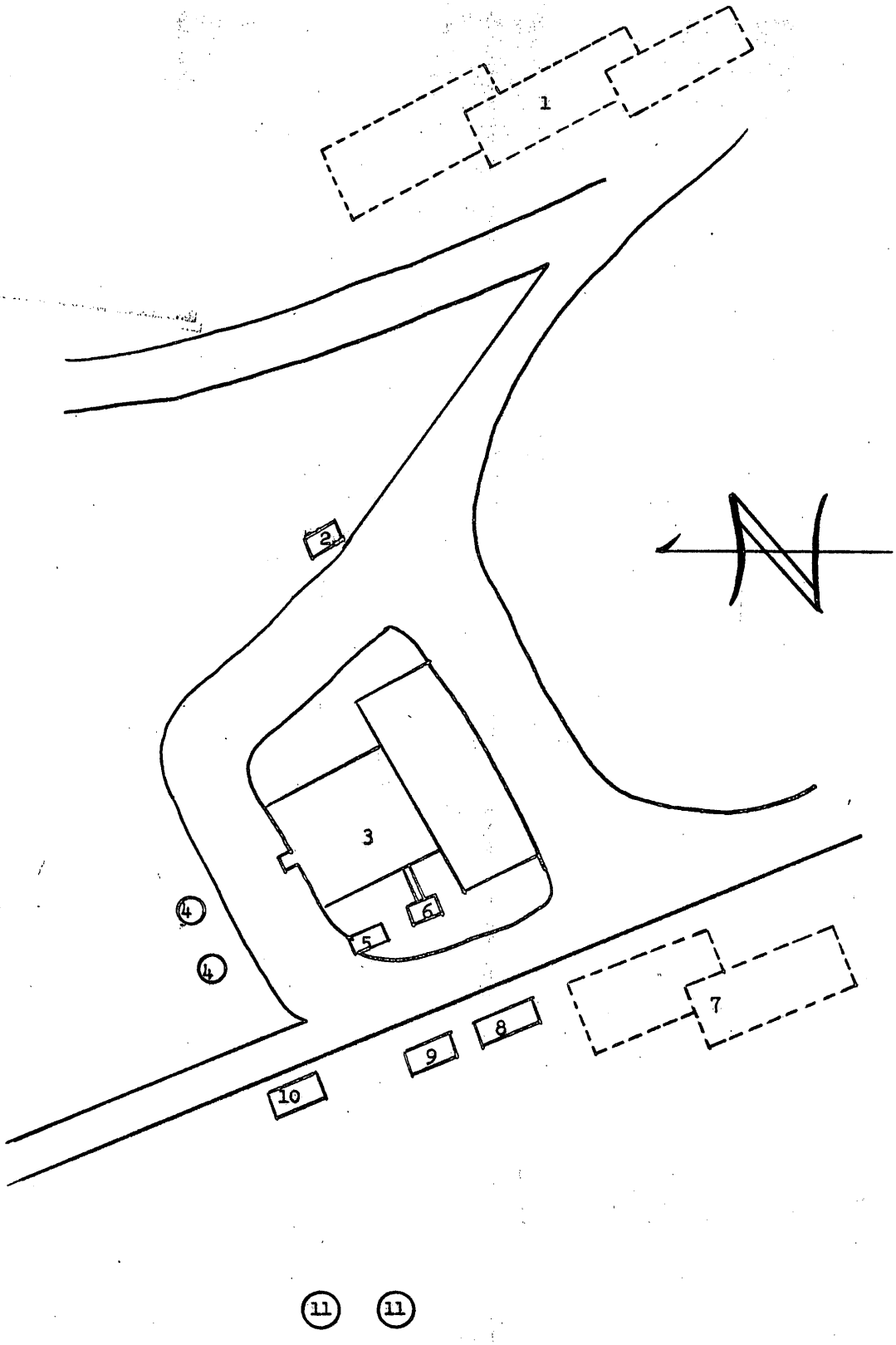
ENCLOSURE B

[redacted] Sketch of Reactor and Auxiliary Buildings 25X1



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ENCLOSURE B - PAGE 2 - Legend for [redacted] Sketch of Reactor and Auxiliary Buildings

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Pt 1 - Future planned site of the Chemical Research Laboratory.

Pt 2 - Main transformers for incoming commercial electric power.

Pt 3 - Building containing the reactor.

Pt 4 - Concrete cooling towers for the secondary water system. The diameter of the towers at the top is six meters, and they are 20 meters high. They have tapering sides with the larger diameter at the base.

Pt 5 - Contamination air fans and ventilation system building.

Pt 6 - Concrete building attached directly to the reactor by channel. To be used for measuring the neutrons rate.

Pt 7 - Future planned site for the Physical Research Laboratory.

Pt 8 - General maintenance building.

Pt 9 - This building houses three pumps for the secondary cooling system. Each is capable of pumping 450 cubic meters of water per hour.

Pt 10 - Underground storage tank for solid radioactive waste.

Pt 11 - Two underground storage tanks for liquid radioactive waste.

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ENCLOSURE C

[redacted] Sketch of Basement of the Reactor Building

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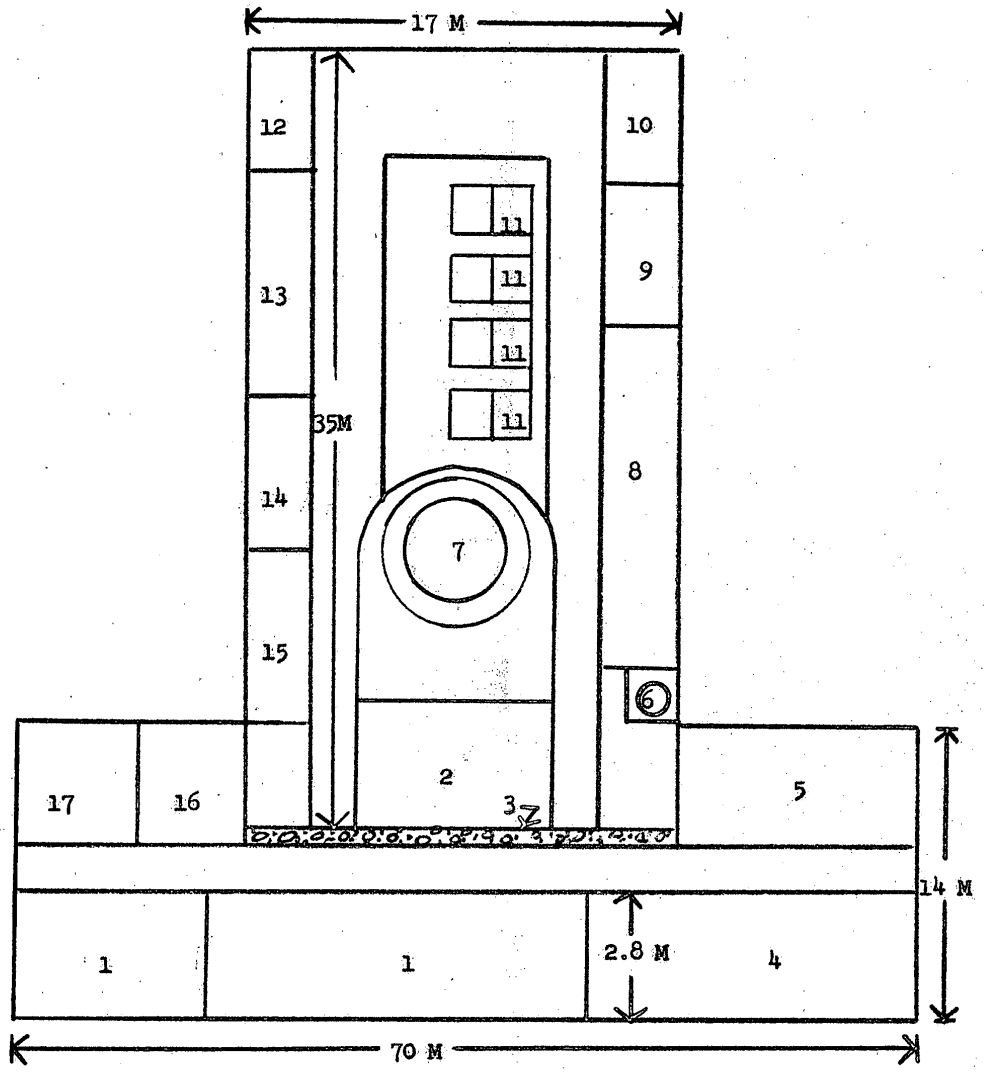

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ENCLOSURE C - PAGE 2 - Legend to [redacted] Sketch of Basement of the Reactor Building

Pt 1 - Maintenance laboratories.

Pt 2 - This room contained five pumps for the primary cooling system, each having a capacity of 300 cubic meters per hour. Operations of the pumps was controlled automatically.

Pt 3 - Concrete shielding wall extending from the floor of the basement to the roof.

Pt 4 - Main electrical control room. All power lines from the transformers entered the building at this point. Three types of current were used: 380/220 V and 127/70 V for nuclear devices, and 24 V for security voltage.

Pts 5 and 17 - Ventilator rooms.

Pt 6 - The water of the primary circuit system returning from the reactor passes through a gas removing device and continues through the system back to the reactor. A brick chimney forty meters high is used to disperse the fumes.

Pt 7 - Reactor.

Pt 8 - Stock rooms.

Pt 9 - Distilled water supply for the primary circuit.

Pt 10 - Chemical service laboratory.

Pt 11 - Four hot rooms. Each with a set of mechanical manipulators. Operators are protected by stainless steel walls.

Pt 12 - Work shop.

Pt 13 - Dosimetry control rooms containing aerosol filters, ion chambers, and vacuum pumps. Stainless steel lines lead to all rooms allowing operators to check security and detect radioactive elements.

Pt 14 - Cleaning compounds are prepared here for all hot areas.

Pt 15 - Air compressor station

Pt 16 - Personnel first aid station.

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ENCLOSURE D

[redacted] Sketch of Main Building and Reactor Hall Floor Plan

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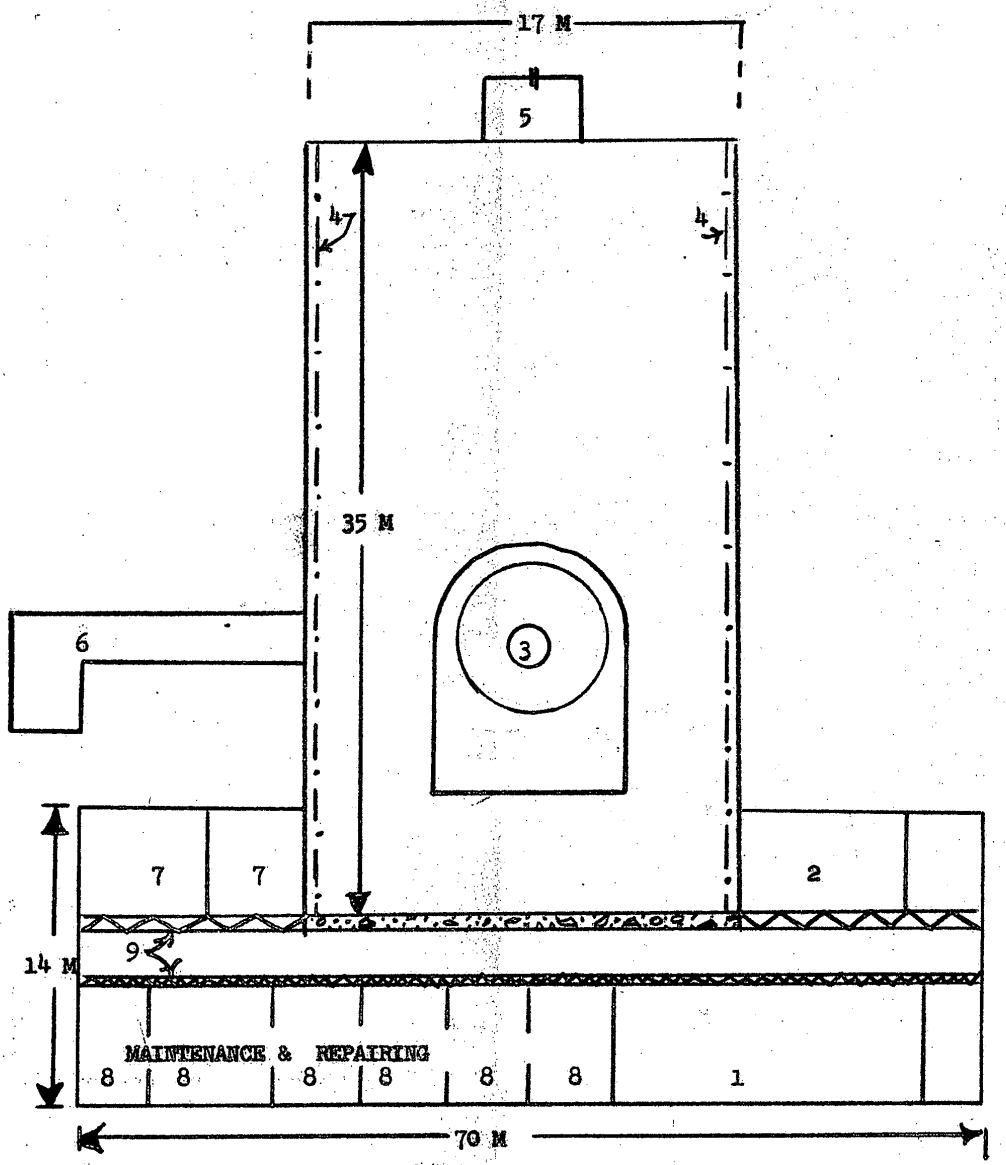

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ENCLOSURE D - PAGE 2 - Legend to [redacted] Sketch of Main Building and Reactor Hall Floor Plan 25X1

Pt 1 - Main electrical switch boards. Power lines emanate in the electrical control room.

Pt 2 - A large number of charged hook-in batteries for use as emergency power source for the three generators located in the electrical control room.

Pt 3 - Reactor.

Pt 4 - A 10 ton, bridge-type electric crane, operating the length of the reactor hall.

Pt 5 - Entrance from the ground level with a double door system.

Pt 6 - Channel from reactor to measuring house used for retarding the flow of neutrons.

Pts 7 and 8 - Repair and maintenance. All the technical personnel and equipment necessary to keep the reactor alive were stationed in these shops.

Pt 9 - Double walls. Inner space provided for communication lines, plumbing, and monitoring devices to the various laboratories.

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ENCLOSURE E

[redacted] Sketch of Second Floor of Main Building and Reactor Hall

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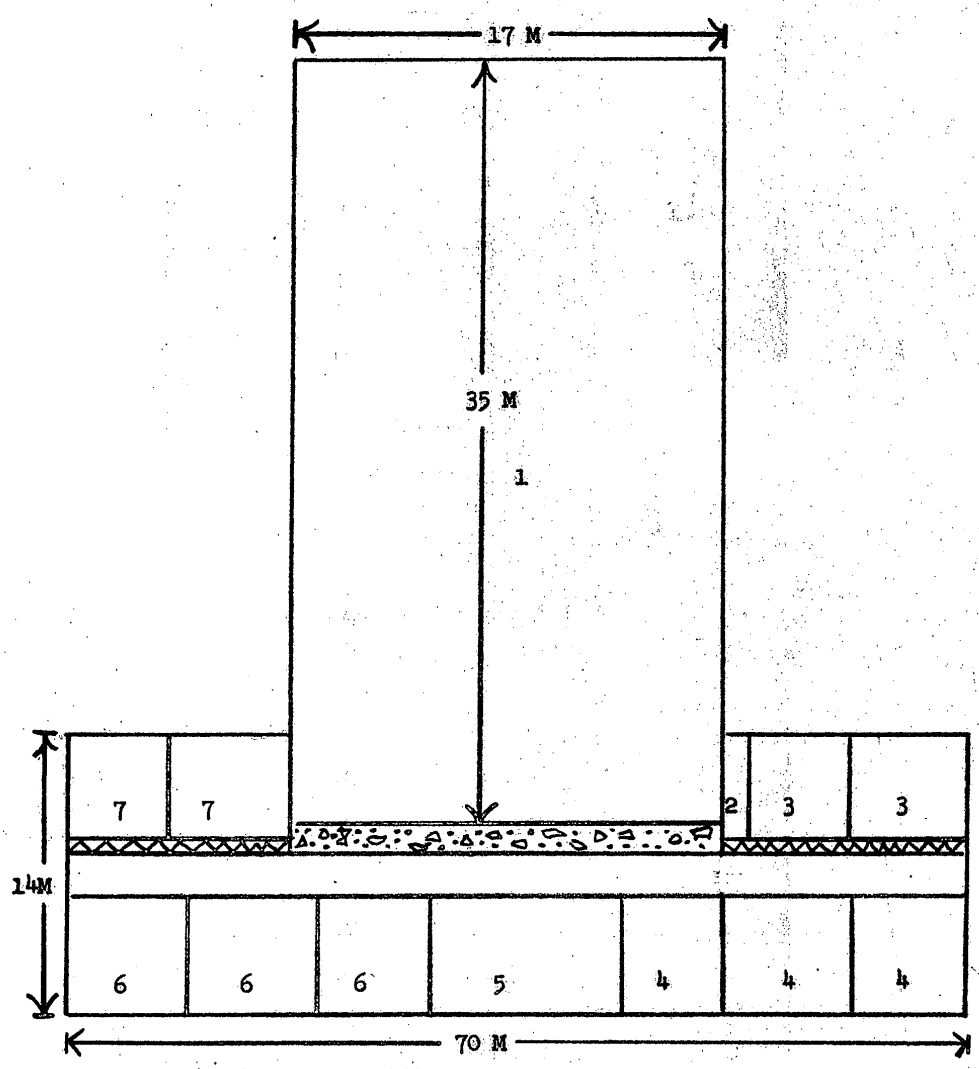
with
Legend



Pt 1 - Open space in the reactor hall.

Pt 2 - Control room for the reactor hall crane.

Pts 3, 4, 6, and 7 - Laboratories for observations of the instruments connected to the channels on the reactor. Readings were transmitted by electric cables.

Pt 5 - Main control room for the reactor. This position is occupied by the director of the installation.

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ENCLOSURE F

[redacted] Sketch of Cut away View of Reactor with Legend

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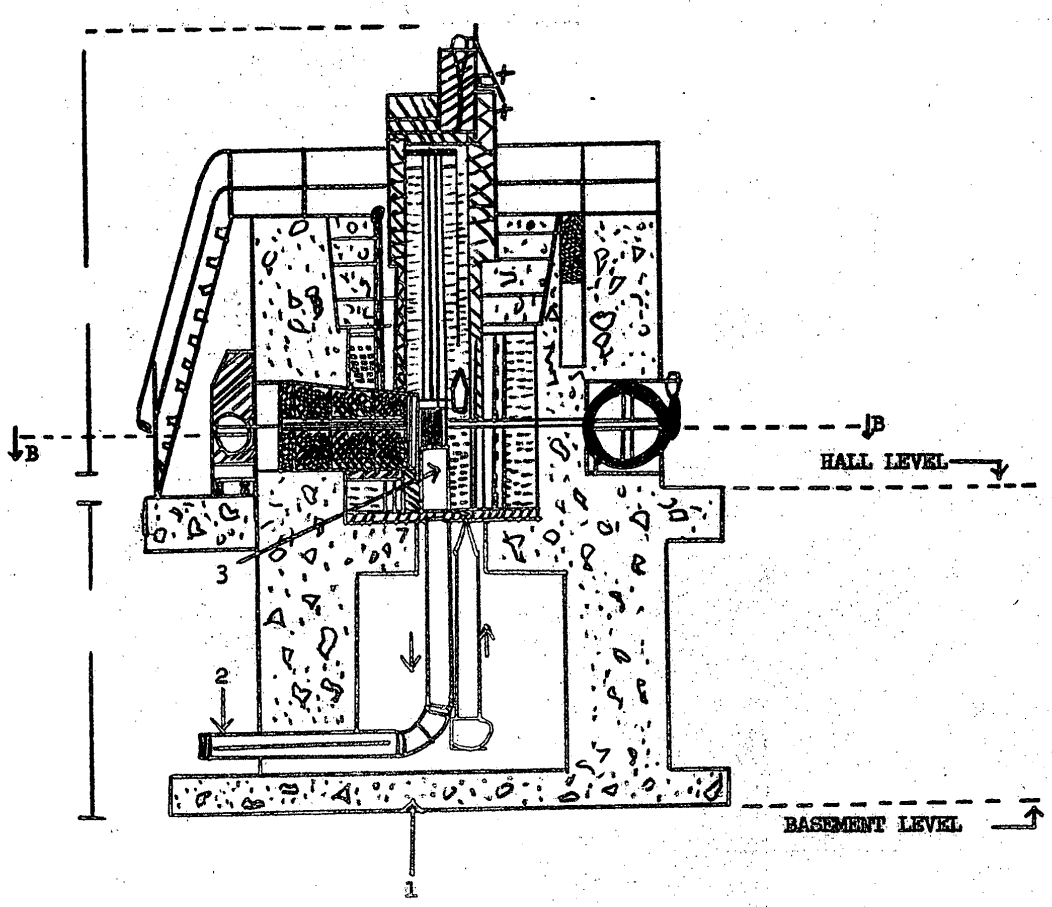

SCALE IS ESTIMATED AT 1:100

Pt 1 - Concrete shielding. Four thousand tons of concrete was used in constructing the shield around the reactor and protection wall between the reactor hall and main section of the building.

Pt 2 - Stainless steel pipe for the primary cooling circuit with flow indicated by arrows.

Pt 3 - Active zone of the reactor.

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ENCLOSURE C

[redacted] Sketch of Cut Away View of the Reactor Channel Arrangement with Legend

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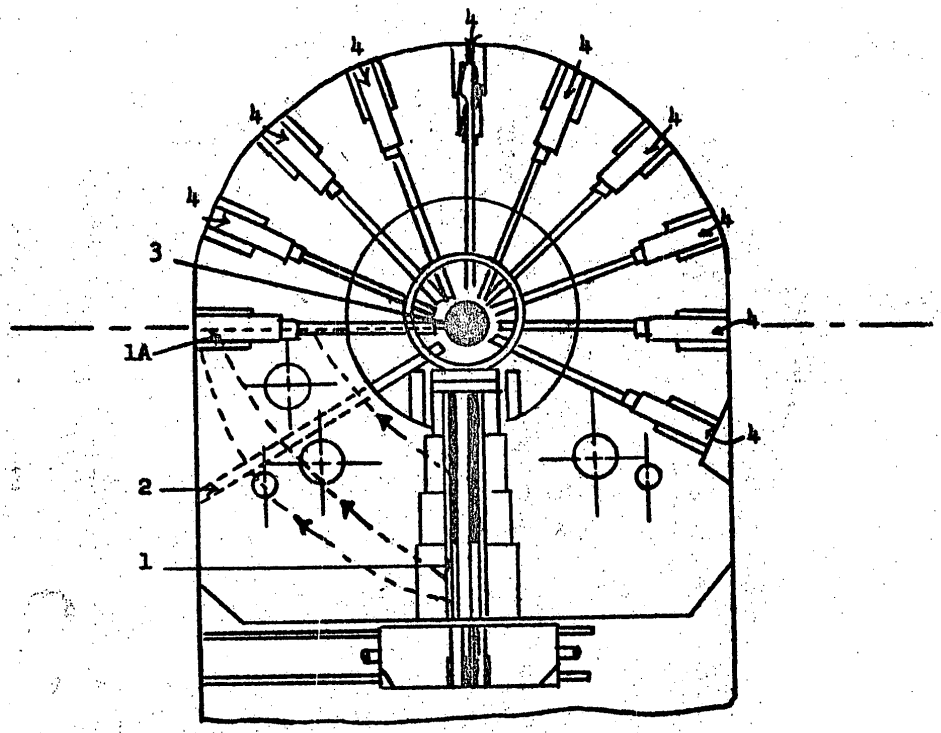

Pt 1 - This channel has been moved from Pt 1 to Pt 1A as the line and arrows on the sketch indicates. This constituted one of the major changes in the basic reactor performed by the Hungarian engineers. Neutrons from the active center are directed through a carbon filled channel to a small concrete building outside the main hall for a measuring speed and control. OK

Pt 2 - Hollow tube used for dropping rods into a pool of water beneath the ram reactor. X

Pt 3 - Uranium 235 and control rods section.

Pt 4 - Nine experimental channels. Nine types of research can be carried on simultaneously. All the recording instruments are attached to the ends of each channel on the outside wall of the reactor.

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ENCLOSURE H

[redacted] Sketch of Underground Storage Tank for Liquid Radioactive Waste With Legend

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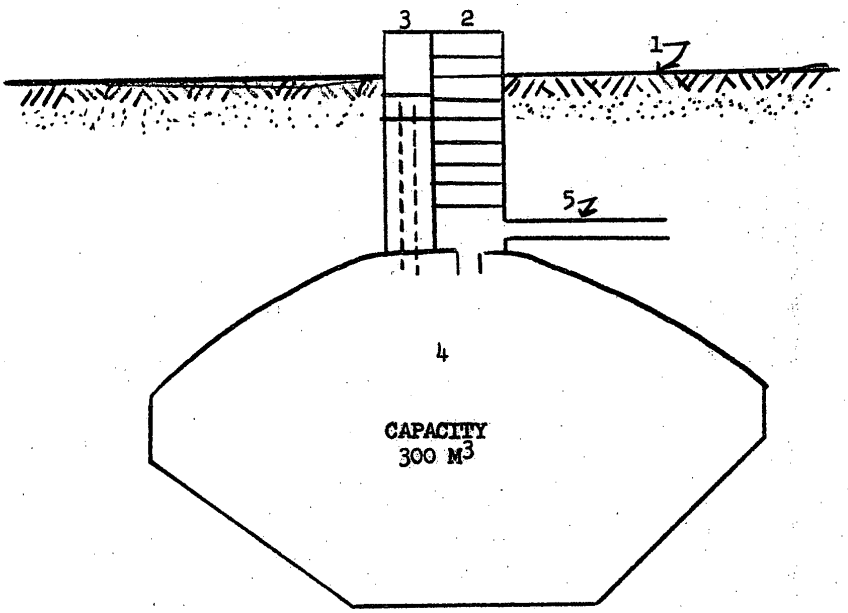

Pt 1 - Ground level.

Pt 2 - A series of concrete blocks arranged one on top of the other. Blocks were constructed before being set, so that they could be removed by crane.

Pt 3 - Special stainless steel pipe was imbedded into the tank for future pumping purposes.

Pt 4 - Concrete waste tank.

Pt 5 - Stainless steel drain pipe for liquid waste, leading from the reactor.

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